

REMARKS/ARGUMENTS

Claims 1-19 are pending in the application. Claims 1, 8, and 14 are amended to clarify that the microfacets being generated are generated three dimensionally so as to approximate a three-dimensional shape of a geometrical shape model. Support for this change appears in FIG. 3, for example.

In the Office Action Figures 5A-C, 8A-D, 9A-E and 10A-D of the drawings were again objected to. In response to the objection asserting that Figures 5A-C, 8A-D, 9A-E and 10A-D are “unintelligible, it is noted that the response filed on October 27, 2005, included black and white photographs as new Figures 5A-C, 8A-D, 9A-E and 10A-D. If the present objection is being made as to these newly submitted black and white photographs as the new Figures 5A-C, 8A-D, 9A-E and 10A-D, an explanation as to what, specifically, is being objected to as being unintelligible in these black and white photographs is respectfully requested. In this regard and as noted in the response filed October 27, 2005, it is respectfully submitted that photographs are the only practical medium to intelligibly show features of the present invention, including the microfacets.

The advisory Action continuation sheet made reference to the objection being continued because a petition to enter the photographs had not been approved. However, such a petition is not specified for accepting black and white photographs under 37 CFR §1.84 (b) which indicates that “[t]he Office will accept photographs in utility and design patent applications . . . if photographs are the only practicable medium for illustrating the claimed invention,” which is clearly the case here. Clarification as to the authority relied upon for requiring a petition to accept submission of black and white photographs is respectfully requested.

Also, and as noted in the Request for Reconsideration filed on July 17, 2006, "it is respectfully requested that this objection to new Figures 5A-C, 8A-D, 9A-E and 10A-D of the drawings be either more precisely explained if maintained or that it be withdrawn."

As further noted in the Request for Reconsideration filed on July 17, 2006:

With respect to the objection raised as to FIG. 9D not showing colors of microfacets, the above-noted last response amended the previous statement in the specification so that it no longer states that the colors of the microfacets are shown in Figure 9D. Therefore, the objection raised as to FIG. 9D not showing colors of microfacets is not based on any statement presently made by the specification.

Accordingly, it is respectfully requested that this objection to FIG. 9D of the drawings be withdrawn.

The rejections presented in the outstanding Office Action of February 17, 2006, included a rejection of Claims 1, 2, 5, 8, 9, 12, 14, 15 and 18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,573,912 to Suzuki et al. (Suzuki) in view of U.S. Patent No. 5,936,626 to Beasley; a rejection of Claims 13 and 19 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki in view of Beasley, and further in view of the publication to Neugebauer; a rejection of Claims 3, 10 and 16 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki in view of Beasley, and further in view of U.S. Patent No. 6,313,841 to Ogata et al.; and a rejection of Claims 4, 6, 7, 11 and 17 under 35 U.S.C. § 103(a) as being unpatentable over Suzuki in view of Beasley, and further in view of U.S. Patent No. 6,118,452 to Gannett.

In response to these rejections the Request for Reconsideration filed on July 17, 2006, pointed out that:

Instead of teaching that the required Claim 1 "microfacets" (that must be used to "approximate a three-dimensional shape of the geometrical shape model") are generated, Beasley teaches (at column 7, lines 27-29) that a "snap shot is taken" that is "turned into a single polygon or low number of polygons billboard." These snapshots are taken from different angles but they always form "silhouette forms" (see column 7, lines 29-39) that are clearly shown by Beasley to be two-dimensional outline "silhouette forms" in Figures 2 C, 3A-

3C, and Figures 4A-4C. Column 5, lines 38-39, of Beasly actually specify that these “silhouettes are flat (i.e., two dimensional).”

To whatever extent that these silhouettes can be stored in a texture memory as indicated at column 7, lines 39-41, that does not change these actual “two-dimensional” outlines into the claimed “microfacets” that must themselves be used to “approximate a three-dimensional shape of the geometrical shape model.” Accordingly, nothing at column 6, line 47-column 7, line 22, in any way teaches or suggests putting together a plurality of the stored silhouettes to “approximate a three-dimensional shape of the geometrical shape model.” The position to the contrary at page 13, lines 14-18 of the outstanding Action that seeks to concentrate on individual silhouettes with added texture being shown as substitutes for full three-dimensional model renditions is clearly made without a careful analysis of the requirements of the language of Claim 1 and is not well founded any more than the repeated misuse of this flawed rationale at page 5, lines 3-6, of the outstanding Action is.

Just as the analysis in the outstanding action that attempts to equate the Claim 1 required “plurality of microfacets used to approximate a three-dimensional shape of the geometrical shape model” on the individual silhouettes of Beasly that each individually represent a different two-dimensional outline of the three-dimensional model as the Claim 1 “microfacets,” the attempt at page 4, lines 11-14, of the outstanding Action to equate them to the completely different triangle mesh model mentioned at col. 3, lines 1-5 of Suzuki is also improper. The triangle mesh model mentioned at col. 3, lines 1-5 of Suzuki is representative of an object surface based upon the work of Curless and Levoy that is criticized along with the other processing techniques in the Description of the Prior Art of col. 1, line 14-col. 3, line 20, as to processing speed. Instead of the criticized processing of Curless and Levoy, Suzuki teaches the use of silhouettes with voxel calculation in the different disclosed embodiments (silhouettes are formed and voxel calculations are performed in the first to fourth embodiments of Figs. 1-4).

The required reasoning why the artisan would attempt to modify the actual embodiments taught by Suzuki with the noted Prior Art teachings of Curless and Levoy is lacking as is any reasonable explanation as to the further proposed modification of Suzuki by Beasly as the only thing these two references have in common is forming silhouettes. In this regard, the PTO reviewing court requires explanations accompanied by reasonable showings as to motivation. See *In re Kotzab*, 55 USPQ2d 1313, 1316-17 (Fed. Cir. 2000) as follows:

Most if not all inventions arise from a combination of old elements. See *In re Rouffet*, 149 F.3d 1350, 1357, 47 USPQ2d 1453, 1457 (Fed. Cir. 1998). Thus, every element of a claimed invention may often be found in the prior art. See *id.* However, identification in the prior art of each individual part claimed is insufficient to defeat patentability of the whole claimed invention. See *id.* Rather, to establish obviousness

based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant. *See In re Dance*, 160 F.3d 1339, 1343, 48 USPQ2d 1635, 1637 (Fed. Cir. 1998); *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Even when obviousness is based on a single prior art reference, there must be a showing of a suggestion or motivation to modify the teachings of that reference. *See B.F. Goodrich Co. v. Aircraft Breaking Sys. Corp.*, 72 F.3d 1577, 1582, 37 USPQ2d 1314, 1318 (Fed. Cir. 1996).

Also note *In re Kahn*, 78 USPQ2d 1329, 1336 (CA FC 2006) (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.”).

The outstanding Action offers only a conclusion that the artisan would want to use the Beasly billboarding teachings (actually drawn to substituting various different orientation from storage to substitute for full three-dimensional models under certain circumstances) to modify Suzuki without a hint of how this could even be attempted without extensive modifications to Suzuki that would destroy or completely change the purpose thereof or that would render Suzuki incapable of performing as intended. *See In re Ratti*, 270 F.2d 810, 813, 123 USPQ 349, 352 (CCPA 1959) and *In re Gordon*, 733 F.2d 900, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

In this regard, it is noted that if Beasly and the above-noted Prior Art teachings of Curless and Levoy as to triangle mesh polygons were to be forcibly combined with the actual Suzuki embodiments it would have to be so that the triangle mesh could be viewed in different orientations according to different view directions of no concern to Suzuki. But the manner that it would be even possible to rotate each triangular mesh as to a changed viewing direction is not explained at all in the outstanding Action and seemingly impossible.

In the final analysis, Beasly teaches billboarding in which a silhouette based on a level of detail is prepared and a Suzuki teaches restructuring a scene from a remote location using a voxel form obtained by a shape from a silhouette. The reason the artisan would reasonably have been led to select these disparate references, much less how the artisan would even go about modifying these disparate references in an attempt to combine their disparate teachings has not been presented which violates further court imposed requirements. *See In re Rouffet*, 149 F.3d 1350, 1359, 47 USPQ2d 1453, 1459 (Fed. Cir. 1998) (“even when the level of skill in the art is high, the [PTO] must identify specifically the principle, known to one of ordinary skill that suggests the claimed combination. In other words, the [PTO] must explain the reasons one of ordinary skill in the art would have been motivated to select the references and to combine them to render the claimed invention obvious.”) and

In re Lee, 277 F.3d 1338, 1342, 61 USPQ2d 1430, 1432-33 (Fed. Cir. 2002) as follows:

... the agency tribunal must present a full and reasoned explanation of its decision. The agency tribunal must set forth its findings and the grounds thereof, as supported by the agency record, and explain its application of the law to the found facts.

The Advisory Action mailed October 3, 2006, indicated the following:

(a) In Beasley, as two snapshots which are already known are used to perform an interpolation process and to prepare a new silhouetted of the object, it is acknowledged that “silhouettes are used to approximate a three-dimensional shape” and the Applicant’s argument cannot be accepted.

(b) It can be acknowledged that the microfacet (silhouette) in Beasley is structured by a 2D polygon based on the description in column 5, lines 35-64 of Beasley, for example.

However, as to item “(a)” above, Applicants note that col. 5, lines 37 to 38 of Beasley expressly state “But since these silhouettes are flat (i.e., two dimensional)....”. Thus, if an interpolation process is performed using these two dimensional flat silhouettes, the process carried out is merely generation of a two-dimensional image (for example, a picture of a three-dimensional airplane rendered in two-dimensions, i.e., having no depth dimension), and an actual three-dimensional shape (which is structured by voxel) is not approximated by microfacets as in the present invention. Therefore, the Advisory Action assertion set forth in the above-noted item “(a)” is not based on a reasonable interpretation of the teachings of Beasley.

In this last respect, it is believed to be clear that as the main point in Beasley is to output a rough image using a silhouette to carry out a high-speed process (real-time process), Beasley does not take into consideration the main point of the independent claims now

clarified as to generating “a plurality of microfacets three dimensionally in such a way to approximate a three-dimensional shape of the geometrical shape model.”

With further regard to the above-noted item “(b),” Applicants note their agreement that column 5, lines 35-65 of Beasley specify a silhouette which is structured by a 2D polygon. However, this is just that, the mere statement that “the silhouette of Beasley is structured by a 2D polygon,” not a reasonable explanation of how the flat silhouette that results is in any way the required “approximate a three-dimensional shape of the geometrical shape model.”

Furthermore, the claimed microfacet and the polygon (triangle mesh) of the present application are completely different concepts as fully explained at page 5, line 16, through page 6, line 3 of the remarks in the Request for Reconsideration filed on July 17, 2006, and repeated above.

Thus, the observation in the Advisory Action as to item “(b)” is not seen to be a convincing argument against Applicants position that “it is unreasonable to consider that the microfacet of the present application is the same as the silhouette of Beasley.” A two dimensional flat silhouette is simply not reasonably read as being an “approximate a three-dimensional shape of the geometrical shape model.”

As noted above and in the Request for Reconsideration filed on July 17, 2006, there is no reasonable basis to suggest a combination of Beasley and Suzuki.

Moreover, Suzuki discloses a technique using a polygon (triangle mesh), but does not disclose or suggest anything about a microfacet which is different from such a polygon. Therefore, there is no teaching to be found in Suzuki that can be said to cure the deficiencies of Beasley.

Accordingly, even if the artisan actually had some unknown reason to combine the teachings in these references, the resulting combination would not include all the limitations

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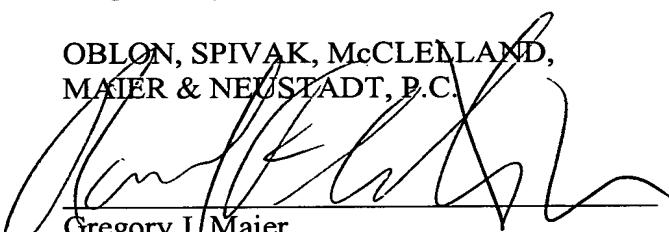
from the independent Claims 1, 8, and 14. Therefore, the allowance of independent Claims 1, 8, and 14 is respectfully submitted to be in order.

Claims 2, 5, 9, 12, and 15 are claims that ultimately depend from one of these independent Claims 1, 8, and 14. Accordingly, these dependent claims are believed to be allowable for the same reasons advanced above as to independent Claims 1, 8 and 14 from which they depend, as well as for their own recited features. Thus, the allowance of dependent Claims 5, 9, 12, and 15 is also respectfully requested.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicant's undersigned representative at the below listed telephone number.

Respectfully submitted,

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